

Management Indicator Species for the New Plan

Success in maintaining and restoring composition, structure, and function of forest ecosystems within desired ranges of variability is reflected by both changes in forest condition and by levels of management and other effects that are shaping these communities. Monitoring will include tracking the abundance of major forest cover/community types and levels of management activities conducted to maintain and restore desired conditions. Population trends and habitats of Management Indicator Species will be monitored to help indicate effects of national forest management within selected communities.

Indicator: Prairie Warbler (*Dendroica discolor*)



From USGS Patuxent Bird ID InfoCenter

Reasons for Selection: Trends in presence and abundance of this species in early-successional forests will be used to help indicate the effectiveness of management in achieving desired conditions within these habitats.

Ecology & Life History

Basic Description: A 12-cm bird (warbler)

General Description: Subspecies DISCOLOR: Adults and immatures have yellow ventral and olive dorsal surfaces. Breeding males have chestnut streaks on upper back, black eye line, malar stripe, and streaks on flanks. Females have same markings less extensive and olive to dark gray instead of black, lack chestnut feathers, and are paler overall. Immatures are grayer and paler, especially on face. Nolan (1978) illustrated and described plumages; Farrand (1983) and Harrison (1984) provided photographs. Length 11.5-12.5 cm, with females slightly smaller than males. Songs are distinctive though variable within

and among individuals; the most common song lasts about 2 seconds and is series of more than 10 short, buzzy notes, equally spaced in time and rising in pitch (Nolan 1978). Individual males have two types of songs, using the B type during the dawn chorus (Nolan 1978). Eggs average 12 x 16 mm, whitish shades from cinnamon to smoke gray, with chestnut to blackish brown spots usually forming a wreath or cap on larger end (Nolan 1978).

Subspecies PALUDICOLA is much paler overall with grayish back; males lack the wide black markings on side and reddish backs (Bent 1953); also larger.

Diagnostic Characteristics: The only warbler with bright yellow under parts and face and a malar stripe separating the yellow below the eye from the yellow on the throat. Regularly bobs tail, as does the palm warbler (DENDROICA PALMARUM; darker back, more streaking, chestnut crown, usually much less yellower under parts, tail bobbing more continuous) and the very rare Kirtland's warbler (DENDROICA KIRTLANDII; much larger, dark-gray head, broken white eye-ring, lacks large white areas on underside of rectrices) (Stevenson and Anderson 1994).

Reproduction Comments: Paired and unpaired males can be distinguished by singing behavior, with unpaired males switching to the type A song at sunrise and singing these at relatively high rates throughout the day, while paired neighbors sing less and use a larger fraction of B songs (Houlihan, pers. comm.). Males begin to sing in late winter, before migrating north (Staicer, unpubl. data).

Nolan (1978) reported that pairing occurs about a week after male arrival on territory. Clutch size for subspecies DISCOLOR is 3-5 (usually 4). Incubation, by female, lasts 12-13 days. Young are tended by both parents, leave nest at 8-10 days.

Pair bonds are largely monogamous, but females may desert mate after nesting attempt and pair with another male who is already mated, especially in mid-season. Some males become polyterritorial, mating with different females on non-adjacent territories (Nolan 1978).

Data from BBIRD sites indicate that nesting success, as calculated by the Mayfield method, was higher in the thinned plantations (24% vs. 17%) where predation rates were lower (33% vs. 54%). Cowbird parasitism was slightly higher (12% vs. 10%) in the young plantations, located closer to grazing cattle.

Ecology Comments

Range-wide, density typically is less than 1 pair per ha; highest breeding densities in Maryland were about 2 pairs per ha (Nolan 1978). In southeastern Massachusetts, density was 0.5-2.5 pairs per ha (Morimoto and Wasserman 1991). In western Massachusetts, approximately 0.7 pairs per ha occurred in a

power line corridor; densities were somewhat higher in burned-over areas (Houlihan, pers. comm.). In forest corridors of New Jersey, recorded in 30% and 20% of point surveys in oak-pine forest and hardwood swamp, respectively (Rich et al. 1994). In northern Arkansas old fields, there was an average 0.25-1.25 singing males per point count (Dechant, pers. comm.). In Arkansas, density in young plantations was more than twice that in thinned plantations (D. Barber and T. Martin, un-publ. data).

Density of D. D. DISCOLOR in winter: 0.1 per ha across pine forest habitats, 1.5 per ha in dense shrubs of Grand Bahama (Emlen 1977); 2 per ha in a favorable lowland second-growth dry forest in Puerto Rico (Staicer 1992), abundant across dry, urban, and pine forests on North Andros Island, Bahamas (Baltz 1993). Mean territory size in Indiana was 1.6 ha (n = 171); at highest population densities (e.g., at a Maryland site) mean territory size was about 0.5 ha. Territory size was larger where longer stretches of undefended boundaries occurred, due to less suitable vegetation and thus lack of neighbors. Males show considerably more site fidelity than females, though males often wander well beyond their territory boundaries (Nolan 1978).

Predators caused 80% of nest failures in Indiana (18% lost to cowbird parasitism; n = 336). The most common predators of eggs and nestlings were snakes and chipmunks (Nolan 1978). In Arkansas plantations, snakes are the main nest predators (Barber, pers. comm.). High rates of nest predation were observed in western Massachusetts, where birds re-nested up to four times (Houlihan, pers. comm.).

The only known disease of adults is avian pox, but lesions occur on less than 1% of sampled birds. Known parasites include mites, ticks, lice, and blowfly larvae (on nestlings); nematodes have been found in the body cavity and pectoral muscle (Nolan 1978).

In winter in Puerto Rico, September-March, individuals generally avoided interactions with other warbler individuals (silent in 77%, solitary in 41% of observations), although some defended territories against conspecifics (Staicer 1992).

Non-Migrant: Y

Locally Migrant: Y

Long Distance Migrant: Y

Migration Comments: More northerly populations arrive at the breeding site later in spring and leave later in the fall than do more southerly breeding populations. Spring migrants begin to arrive in March in the southernmost areas, in April in mid-latitude areas, and in early May in New England. Fall migration

peaks during the first half of September in Indiana, a week later in Massachusetts, and 1-2 weeks earlier in Maryland and the District of Columbia (Nolan 1978). Arrives in Puerto Rico as early as September, departs by April (Raffaele 1983). Arrives on wintering grounds in August, stays until April (Pashley 1989).

Estuarine Habitat(s): SCRUB-SHRUB WETLAND

Palustrine Habitat(s): FORESTED WETLAND, RIPARIAN

Terrestrial Habitat(s): OLD FIELD, SHRUBLAND/CHAPARRAL, WOODLAND – CONIFER.

Habitat Comments: BREEDING: Brushy second growth, dry scrub, low pine-juniper, mangroves, pine barrens, burned-over areas, sprout lands. Small patches of habitat may be suitable for breeding. Subspecies DISCOLOR primarily inhabits various types of shrubby vegetation: brushy second growth, dry scrub, low pine-juniper, jack pine stands, pine barrens, coastal pine sub-climax, christmas tree farms, burned-over or cut-over areas, sprout lands, grassland-forest ecotone, power line corridors, inner forest of Great Dismal Swamp, corridors in hardwood swamps, re-vegetating strip-mined lands, overgrown apple orchards, and abandoned fields in the breeding season. Many of these habitats are early successional and are suitable beginning about 5 years after burning or clearing and continuing for about 10-20 years.

Nests usually in a shrub, sapling, thicket, or fern clump, usually 0.3-3 m above ground, occasionally higher (Harrison 1978). In western Massachusetts power line corridors, nests were 1-3 m above ground in vegetation clumps (1-10 m in diameter) of scrub oak, alder, or meadowsweet; nest locations had 30-100% cover (Houlihan, pers. comm.). In northern Arkansas, nesting areas included old fields invaded by cedars, locusts, sweetgum, persimmon, and pawpaw (Dechant, pers. comm.).

The following data are from Breeding Biology Research and Monitoring Database (BBIRD) sites in Arkansas plantations, where nests were mainly in hickory, elm (mostly winged), blackgum, oak, red maple, and vaccinium (D. Barber and T. Martin, un-publ. data). Mean values for nest site characteristics in thinned and young plantations were, respectively, 52 and 66% side cover, 67 and 80% overhead cover, 2.6 and 1.5 m nest height, 3.2 and 2.4 m plant height, 4.1 and 3.5 cm plant dbh, and presence of 8 and 13 small (<2.5 cm) and 70 and 54 large woody stems in a 5-m radius surrounding nests.

NON-BREEDING: In migration and winter, occurs in various woodland, second growth, brush, and thicket situations. Winter is spent mainly in arid lowland forest or scrub, especially second growth, pine, pastures, brushy fields; mangroves, shade trees, sun coffee, and forest edge also are used (Lack and

Lack 1972, Arendt 1992). More common in dry forest of introduced mimosaceous trees at Cabo Rojo National Wildlife Refuge (where insects more abundant and birds had higher fat scores) than in dry forest of native species in Guanica (Baltz, pers. comm.). Across the Caribbean region, shows moderate habitat specialization (Wunderle and Waide 1993). In winter in Puerto Rico, September-March, individuals showed strong site fidelity within and between seasons (nearly 50% returned for a second winter, 40% a third winter).

Food Habits: INVERTIVORE

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